



MACHAKOS UNIVERSITY

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**FOURTH YEAR SUPPLEMENTARY/SPECIAL EXAMINATION FOR
BACHELOR OF SCIENCE IN BIOLOGY**

SBT 414: MEDICAL MICROBIOLOGY

DATE: 8/3/2023

TIME : 8.30 – 10.30 AM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions
2. Use clean well labelled diagrams wherever appropriate.

QUESTION ONE (30 MARKS)

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|----|--|-----------|
| a) | Distinguish between inoculation and incubation | (3 marks) |
| b) | Outline the virulence factors of <i>Staphylococcus aureus</i> | (3 marks) |
| c) | A virus is neither eukaryotic nor prokaryotic. Explain | (3 marks) |
| d) | Explain the action of antimicrobial drugs on the cell wall | (3 marks) |
| e) | Distinguish between broad spectrum and narrow spectrum antibiotics | (3 marks) |
| f) | Explain the respiratory portal of entry of pathogens | (3 marks) |
| g) | Relate the structure of the cell wall to the outcomes of Gram staining | (3 marks) |
| h) | Explain the role of Mannitol salt agar as a differential media | (3 marks) |
| i) | Explain significance of subculturing in microbial investigations. | (3 marks) |
| j) | Distinguish true pathogens from opportunistic pathogens | (3 marks) |

QUESTIONS TWO (20 MARKS)

- a) Discuss three categories of media for bacterial cultivation in the lab (15 Marks)
- b) Explain the process of characterization of *Samonella spp* from a sewage water sample (5 Marks)

QUESTIONS THREE (20 MARKS)

Discuss the HIV virus under the following sub headings

- a) Pathogenesis (5 marks)
- b) Diagnosis (5 marks)
- c) Epidemiology (5 marks)
- d) Treatment (5 marks)

QUESTIONS FOUR (20 MARKS)

Discuss five specific mechanisms of drug resistance . (20 marks)

QUESTIONS FIVE (20 MARKS)

- a) Discuss three categories of microbial virulence factors (15 marks)
- b) Distinguish the physical and chemical host defense mechanisms (5 marks)